



How does social support relate to emotional availability for learning during COVID-19? A multi-group structural equation model of university students from the U.S. and Israel

Jason Jabbari¹ · Melissa Bessaha² · Sana Malik² · Dan Ferris¹ · Sophie Brickman³ · Miriam Schiff⁴ · Ruth Pat-Horenczyk⁴ · Michal Grinstein-Weiss¹ · Tyler Frank⁵

Received: 2 August 2022 / Accepted: 13 March 2023 / Published online: 5 April 2023
© The Author(s), under exclusive licence to Springer Nature B.V. 2023

Abstract

Given the social and emotional tolls of the COVID-19 pandemic on college and university students, many students have become academically disengaged during the pandemic. Although some colleges and universities have the capacity to promote social support for their students, research has yet to comprehensively demonstrate the relationship between social support and academic engagement. To fill this gap, we leverage survey results from four universities across the United States and Israel. Through multi-group structural equation modelling, we explore (a) how perceived social support relates to being emotionally unavailable for learning, (b) how this relationship is partially explained through coping and COVID-19 concerns, and (c) how these relationships can differ across countries. We find that students who perceived higher levels of social support had lower rates of being emotionally unavailable for learning. Part of this relationship occurred through greater rates of coping and, subsequently, fewer concerns about the pandemic. We also noticed significant differences in these relationships between countries. We conclude with a discussion of study implications for higher education policies and practices.

Keywords COVID-19 · Higher education · Social support · Academic engagement

✉ Jason Jabbari
jabbari.jason@wustl.edu

¹ Social Policy Institute, Brown School at Washington University in St. Louis, St. Louis, USA

² School of Social Welfare, Stony Brook University, Stony Brook, USA

³ Psychology Department, University of Colorado, Colorado Springs, USA

⁴ Paul Baerwald School of Social Work and Social Welfare, The Hebrew University of Jerusalem, Jerusalem, Israel

⁵ Public Health Sciences, Brown School at Washington University in St. Louis, St. Louis, USA

1 Introduction

Since the earliest cases of the novel coronavirus were diagnosed in December of 2019 in Wuhan, China, the impact of COVID-19 has rapidly spread to numerous countries and communities around the globe. As of January 2023, the U.S. had nearly 1.1 million deaths, while Israel had over 12,000 deaths (Johns Hopkins Coronavirus Resource Center, 2023). In both countries, institutions of higher education rapidly shifted to virtual formats to protect public health, while offering continued educational services to meet the needs of students.

As young adults normally have higher rates of anxiety, depression, suicide, and substance use (Goodwin et al., 2020), it is unsurprising that COVID-19 stressors have exacerbated their mental health outcomes. In particular, college students have demonstrated concerns about contracting COVID-19, concerns about becoming ill from the virus, and concerns about others in their social network contracting the virus (Tasso et al., 2021). Numerous studies have demonstrated that college students report high levels of anxiety, depression, and post-traumatic symptoms (PTS) in response to the COVID-19 pandemic (e.g., Copeland et al., 2021; Liu et al., 2020; Wang et al., 2020). Unsurprisingly, college students' mental health appears to be associated with student concerns about their own academic performance (Son et al., 2020) and pandemic-related academic delays (Cao et al., 2020).

For many college students, the higher education system is responsible for not only providing education, but also *material support*—including housing, dining, and employment—and *social support*—including peer groups, clubs, and physical and mental health services. Indeed, the environmental aspects of universities can have a strong impact on students' academic approach and achievement (Lizzio et al., 2002), particularly in times of crisis. Current investigations suggest that students' COVID-19 concerns—in the context of social isolation and dramatically different learning environments—can contribute to negative impacts on their mental health and well-being (Berger et al., 2021; Browning et al., 2021; Cao et al., 2020; Son et al., 2020), which can hinder their ability to concentrate and engage with online learning (Son et al., 2020).

As a result, research has begun to demonstrate a decrease in academic engagement due to the pandemic (Browning et al., 2021). As noted by Daniels et al. (2021), academic engagement is multi-dimensional and be operationalized in many different ways. For example, Fredricks et al. (2004), consider cognitive, behavioral, and emotional dimensions in their conceptualization of academic engagement. In nearly all conceptualizations, emotional academic engagement tends to focus on students' attitudes towards their courses. As a result, achievement-related emotions, such as hope, pride, relief, anger, and anxiety (Pekrun et al., 2011), are common explorations within the emotional academic engagement literature.

Even in times of widely experienced external stressors, such as the COVID-19 pandemic, emotional academic engagement tends to focus specific aspects of students' courses, and less about external factors. For example, Daniels et al. (2021) examined emotional engagement in relationship to students' goals during the COVID-19 pandemic; however, their construct of emotional academic

engagement—originally developed by Sun and Rueda (2012)—was focused more on particular aspects of students' courses, and less about learning engagement in general. Furthermore, Chiu's study (2022) examining learning environments and students' emotional academic engagement during the pandemic also uses a measure that focuses on course interest and excitement, as opposed to learning engagement in general.

Thus, even though many studies have explored academic engagement broadly during the pandemic—including emotional academic engagement, less is known about students' emotional availability—and *unavailability*—for learning in general. Although there is not a standardized, validated construct for emotional availability for learning, some research has explored emotional engagement in learning in direct relation to external stressors, like the COVID-19 pandemic. Most notably, Moreno-Fernandez et al. (2020) use the Maslach Burnout Inventory-Student Survey and the Utrecht Work Engagement Scale-Students to examine how burnout relates to academic engagement among pharmacy students during the pandemic. Similarly, Mesghina et al. (2021) used the Impact of Events Scale and the Mind Wandering Questionnaire to explore how COVID-19 distresses can increase distractions and decrease learning for college students during the pandemic. In each case, emotional *disengagement* in learning was partly attributed to external factors (i.e. the pandemic), as opposed to solely attributed to the specific aspects of courses themselves. Nevertheless, neither study was able to capture a unified construct resembling emotional disengagement in learning from external stressors. In this regard, Händel et al. (2022) examined readiness for digital learning and emotional perceptions during the pandemic. While Händel et al. (2022) conceptualization of readiness for academic engagement focused on having the necessary equipment and technical skills for learning, their focus on learning *readiness* can be applied to emotional academic engagement as well (e.g. students' *emotional* readiness to learn).

Thus, building off prior literature, we conceptualize a new dimension of emotional academic engagement: emotional availability for learning. By doing so, we add to the literature by exploring emotional disengagement from learning as resulting from external stressors (i.e. the pandemic), as opposed to internal aspects of a particular course (e.g. excitement, interest, etc.). Here, we conceive that external stressors may occupy students' emotions and therefore make them less *emotionally* available for learning.

While recent research has explored COVID-19 concerns and its association with mental health and academic engagement (Son et al., 2020), previous research has not fully explored how protective factors such as social support may be related. For example, using survey data from China, Zhou and Yu (2021) found that social support was related to students' online learning self-efficacy and, ultimately, well-being; yet, the authors did not explore students' emotional availability for learning or the mediating relationships between social support and learning. When considering the importance of social support in students' well-being—especially among non-traditional students (Raaper et al., 2022), it is important not only to understand *if* social support is related to academic engagement, but also *how* it is related, so that interventions can be appropriately crafted. Given that colleges and universities often have some capacity to provide social support to students—either directly

through one-on-one services or indirectly through group facilitations, research that can comprehensively demonstrate the relationship between receiving social support and being emotionally available for learning has the ability to guide university policies and practices both during and after COVID-19.

In order to explore *how* social support relates to emotional availability for learning, it is important to explore mediating factors. In filling the current gap in the literature, we use structural equation modeling to demonstrate how the relationship between perceived social support received during COVID-19 relates to being emotionally unavailable for learning *through* coping and a latent construct of COVID-19 concerns. As the concerns that students have with COVID-19 are multifaceted, latent modeling approaches, such as those found in structural equation models, are better able to comprehensively capture these concerns. Finally, there is growing interest in international comparisons for better understanding both the unique and universal aspects associated with students' mental health during the COVID-19 pandemic (Bareket-Bojmel et al., 2021; Mana et al., 2021). Yet, few international studies have addressed coping of university students (Schiff et al., 2021; Tasso et al., 2021), especially in the context of social support and learning availability. Notably, there have been considerable differences among countries in the spread of the virus and governmental mitigation guidelines (Mana et al., 2021), which may interact with more fundamental differences in the social contexts of higher education and societies at large. It is therefore important to learn from the similarities and differences in students' social support, coping, COVID-19 concerns, and availability for learning across multiple countries. Thus, we also test the moderating role of students being located in American and Israeli university institutions.

2 Theoretical framework

Our study's theoretical framework is informed by previous work on coping and its relationship to social support (Lazarus, 1993; Lazarus & Folkman, 1984). As outlined by Lazarus and Folkman (1984), problem-focused coping entails using active strategies, such as seeking support and planning, to manage stressors, while emotion-focused coping entails processing emotions, such as reappraising stressors as non-threatening (Lazarus, 1993; Lazarus & Folkman, 1984; Riley & Park, 2014). In relation to academics, recent research has found that students using more problem-focused coping strategies have demonstrated more positive academic outcomes (Gustems-Carnicer & Calderón, 2013). As stress often occurs when an individual's available resources do not meet their needs (Hobfoll et al., 1997), coping theory becomes particularly important in understanding students' responses to COVID-19. Here, social support can act as an important resource that can help students effectively cope with the stressors associated with the pandemic, ultimately improving academic outcomes (Gustems-Carnicer & Calderón, 2013; Gustems-Carnicer et al., 2019).

Regarding social support, previous research has demonstrated that receiving social support—and even *perceiving* social support—can operate as an important

resource in times of distress, often contributing to overall wellbeing (Hobfoll et al., 1997; Schwarzer & Knoll, 2007). As outlined by Schwarzer et al. (2004), social support can take many forms, including but not limited to instrumental support (e.g., helping to solve a problem), tangible support (e.g., providing goods and services), informational support (e.g., providing advice), and emotional support (e.g., giving reassurance). While *received* social support often requires individuals to recall specific past experiences, *perceived* social support is mostly used to measure the availability of social support and/or general satisfaction with social support received (Sarason et al., 1990). Given the various ways in which individuals experience stress from the pandemic and subsequently seek support in response to these stressors, many researchers have focused on the latter to broadly understand how individuals perceive their social support (Pat-Horenczyk et al., 2022).

There is extensive evidence demonstrating how social support can act as a protective factor against mental health difficulties, especially in stressful situations (Chao, 2011). In the context of university students, lack of emotional availability for learning may represent a proximal indicator for mental health difficulties during the pandemic. When considering the role of coping during the pandemic, social support may impact emotional unavailability for learning in multiple ways. First, social support may reduce the associations between stress and mental health difficulties by facilitating more adaptive coping strategies to better handle the situation (Baqutayan, 2015). Indeed, social support has been associated with coping behaviors among college students. More specifically, the level of perceived social support was positively associated with students' use of problem-focused coping. Second, social support may reduce or prevent a stressful appraisal response during the pandemic. Here, the mere acknowledgement that others may provide essential resources may redefine the negativity of the event and enhance the perceived ability to cope with it. In the context of stressful events, such as COVID-19, problem-focused strategies are often considered more effective at handling difficult situations (Asberg et al., 2008), like virtual learning.

3 Conceptual model and hypothesis development

The proposed conceptual model applies theories of coping to higher education at a particular time of widespread distress—the COVID-19 pandemic (Fig. 1). Focusing on students' emotional health, we conceptualize a moderated-mediation model in which perceived social support is related to students' emotional unavailability for learning both *directly* and *indirectly through* coping and COVID-19 concerns. In both cases, these relationships are moderated by country effects, which demonstrate the degree to which these relationships are significantly different across a sample of students from the U.S. and Israel.

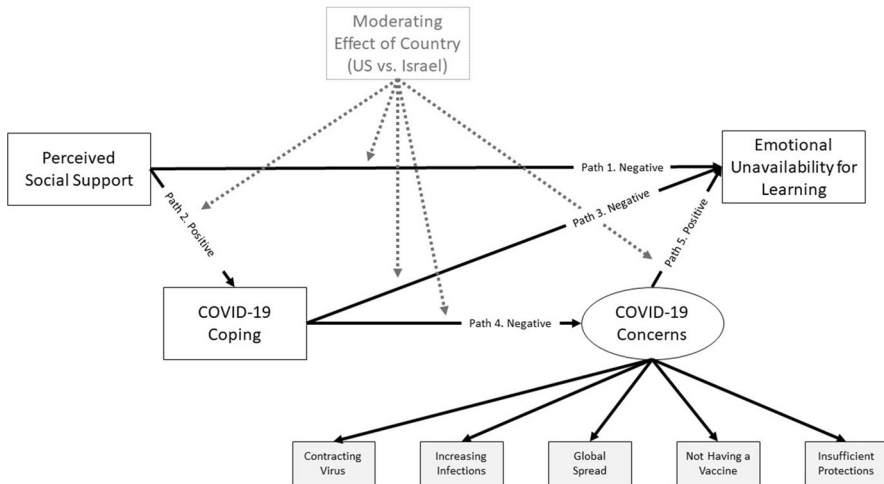


Fig. 1 Conceptual model

3.1 Path 1: perceived social support and emotional unavailability for learning

In times of distress, students often seek support from their social surroundings, which—as seen in the case of COVID-19—can be related to improved mental health and other adjacent outcomes (Meng et al., 2020). Indeed, for college students, social support has not only been a strong predictor of health (Lazarus & Folkman, 1984), but also a strong predictor of academic persistence (Mallinckrodt, 1988) and achievement (DeBerard et al., 2004). Thus, we include a path from social support directly to emotional unavailability for learning.

More recently, researchers have begun to explore *how* social support impacts academic performance through particular mechanisms, often through mediation analyses (Dupont et al., 2015). For example, recent research found a partial mediating effect of online learning self-efficacy in the relationship between social supports and well-being among Chinese college students (Zhou & Yu, 2021). We therefore include additional paths to emotional unavailability for learning—including coping and COVID-19 concerns.

3.2 Path 2: perceived social support and COVID-19 coping

Social support can often be seen as a buffer on distress (Wheaton, 1985) and an important piece of the coping process (Thoits, 1986). Research on COVID-19 consistently demonstrates a strong relationship between social support, coping, and psychological distress (Park et al., 2021). Specifically, increasing social support can increase positive coping behaviors during social isolation (Moore & Lucas, 2021). Additionally, among college students in China, social support and adaptive coping strategies were related to decreased psychological distress (Yu et al., 2020). In

accordance with theories of coping and social support, we include a path from social support to COVID-19 Coping.

3.3 Path 3: COVID-19 coping and emotional unavailability for learning

While the relationships between coping and learning availability have received less attention in the literature, effective coping strategies have been linked to improved academic performance (Gustems-Carnicer et al., 2019; Shields, 2001). In an adolescent sample, recent research found that social support from family members and teachers increased students' ability to cope with the demands of distance learning (Berger et al., 2021). Additionally, in a study conducted during COVID-19, the authors found that better coping strategies were associated with a reduction in the strength of the relationship between exam-related anxiety and self-efficacy, which supports the idea that coping can promote greater availability for learning (Arora et al., 2021). We therefore include a path from COVID-19 coping to emotional unavailability for learning.

3.4 Path 4: COVID-19 coping and COVID-19 concerns

Research on COVID-19 has also revealed that individuals with more emotion-focused coping styles were protected against worrying about COVID-19 (Sebri et al., 2021). These coping strategies were also associated with reduced anxiety scores (Cincidda et al., 2022). Taken together, these findings suggest that effective coping strategies may reduce further concerns about the pandemic. Therefore, we include a path from COVID-19 coping to COVID-19 concerns.

3.5 Path 5: COVID-19 concerns and emotional unavailability for learning

Sources of stress have long been considered impediments of academic performance (Frazier et al., 2019; Sohail, 2013). As COVID-19 represents a significant stressor, emergent research demonstrates that college students report high levels of COVID-19 concerns (Son et al., 2020). Moreover, recent research demonstrates that greater pandemic-related stress and concerns are associated with poor academic performance (Oducado & Estoque, 2021). As a result, we include a path from COVID-19 concerns to emotional unavailability for learning.

3.6 Students in the U.S. and Israel

Research has suggested that Israeli individuals may place a stronger emphasis on group membership, social cohesiveness, and solidarity—especially in times of collective stress or traumatic events (Ben-Dor et al., 2008; Birenbaum-Carmeli, 2001; Israeli et al., 2018). As a result, relationships between social support and coping may be stronger in Israel. At the same time, with potentially compounding sources of distress given the widespread coverage and attention around

police brutality in the U.S. during the pandemic, the relationships between COVID-19 concerns and emotional unavailability for learning might be weaker.

As a result, we hypothesize that perceived social support during COVID-19 will be negatively related to emotional unavailability for learning both directly and indirectly. We also hypothesize that the relationship between perceived social support and coping, as well as between COVID-19 concerns and learning availability will be stronger for students in Israel. With a more homogenous population of students in Israel, we hypothesize that social support from their surroundings may be stronger among Israeli students. Moreover, when considering the timeframe of when a large proportion of U.S. respondents completed the survey, we hypothesize that other concerns, such as concerns for racial justice, may have resulted in COVID-19 concerns having a relatively smaller influence on emotional unavailability for learning in the U.S. We therefore ask the following questions:

- (1) How does perceived social support during COVID-19 relate to university students' emotional unavailability for learning?
- (2) Is this relationship mediated by students' coping and COVID-19 concerns?
- (3) Are these relationships moderated by university's country?

4 Methods

4.1 Data source

Our survey was conducted at four different universities: (a) the Brown School at Washington University in St. Louis, which offers graduate programs in social work, public health, and social policy ($n = 341$; students completing the survey from May 6th to May 15th); (b) the Schools of Social Welfare, Nursing, Health Technology and Management, and the Graduate School at Stony Brook University (SBU), a State University of New York (SUNY) institution on Long Island ($n = 428$; students completing the survey from June 22nd to August 23rd); (c) the undergraduate and graduate student body at the University of Colorado—Colorado Springs campus ($n = 933$; students completing the survey from June 8th to August 28th), and (d) the undergraduate student body at Hebrew University ($n = 4555$; students completing the survey from March 23rd to May 18th, 2020). All universities received IRB approval and conducted the survey online through an online survey provider (e.g. Qualtrics). A small proportion of our overall sample (< 10%) was removed by list-wise deletion leaving a total of 5814 student participants in our final sample—1391 from the U.S. and 4423 from Israel. Despite the variety in graduate and undergraduate students in the combined sample, it is important to note that the country samples were quite similar on their makeups across sex (U.S. = 28% male; Israel = 33% male) and age (U.S. = 27; Israel = 27).

4.2 Measures

4.2.1 Perceived social support

One item measured students' perceived social support: "How much emotional support do you receive from your surroundings?" Response options ranged from 1 = no support at all to 10 = a lot of support.

4.2.2 COVID-19 coping

One item assessed students' coping with COVID-19: "How well are you coping with the COVID-19 pandemic?" Response options ranged from 1 = not coping well at all to 10 = coping extremely well.

4.2.3 COVID-19 concerns

Five items were used to assess students' COVID-19 concerns including: *Concerns for Contracting COVID-19 Virus* ("How worried are you that any person may pass the virus to you?"), *Concerns for Increasing Infections* ("How worried are you about the growing number of infected people in the U.S./Israel?"), *Concerns for Global Spread* ("How worried are you about the spread of the virus around the world?"), *Concerns for Not Having a Vaccine* ("How worried are you that there is currently no vaccination or cure for the virus?"), and *Concerns for Insufficient Protections*. ("How worried are you that measures are not sufficient to stop the spread of the virus?"). Response options for these items included: 1 = not at all worried; 2 = slightly worried; 3 = moderately worried; 4 = very worried; and 5 = extremely worried.

4.2.4 Emotional unavailability for learning

One item measured students' emotional unavailability for learning. Respondents were asked how well the following statement describes their situation during the past semester: "I was not emotionally available for studying these days; my mind was elsewhere". Response items included: 1 = does not describe my situation at all; 2 = slightly describes my situation; 3 = moderately describes my situation; 4 = mostly describes my situation; and 5 = exactly describes my situation.

4.3 Data analysis plan

In order to explore the relationships among perceived support, coping, COVID-19 concerns, and emotional unavailability for learning, we employed a structural equation modeling (SEM) approach. SEM allows us to simultaneously test the significance and strength of multiple hypothesized structural relationships over time with both observed

and latent variables (Kline, 2006; Muthén & Muthén, 2009). Similar to Jabbari et al. (2022), we employed a four-step process in our analytic approach using Mplus (Version 8).

- Step 1 included performing confirmatory factor analysis (CFA) in order to create a valid latent construct of COVID-19 Concerns.
- Step 2 involved a single-group SEM to understand the mediating role of COVID-19 coping and concerns on the relationship between social support and emotional unavailability for learning. Within our SEM models, we used a mean and variance-adjusted weighted least squares WLSMV estimator, which involves both diagonal and full weight matrices to compute standard errors and is robust to non-normal multivariate distributions within our data. In doing so, we used a probit link function.
- Step 3 included performing a multi-group confirmatory factor analysis (MGCFA) to demonstrate group invariance across our latent construct. We tested three different models of group invariance: (a) a configural model in which the structure of the CFA is the same, but factor loadings and item intercepts (thresholds with ordered categorical data) are free to vary across groups; (b) a metric model in which the factor loadings are constrained to be equal across groups; and (c) a scalar model in which the factor loadings and item intercepts are constrained to be equal across groups (Byrne, 2011). In order to test differences in structural paths across groups, metric invariance must be attained; in order to test differences in latent means across groups, scalar invariance must be attained (Byrne, 2011).
- Finally, step 4 included conducting a multi-group structural equation modeling (MGSEM) to understand the moderating effects of students' countries. In order to test moderating effects, structural paths are constrained—one at a time—to be equal across groups (Bowen & Guo, 2011). Because models with new parameter constraints are nested within previous less-restrictive models, chi-squared difference tests can be used to determine whether or not more-restrictive models have statistically significant worse levels of fit (Bowen & Guo, 2011). While chi-square tests can be sensitive to large samples ($N \geq 400$) in determining overall levels of fit in SEM, they are more reliable in testing differences in fit across groups (Bowen & Guo, 2011) and generally used in testing moderation effects in MGSEM. If more-restrictive models do have worse levels of fit, then previous less-restrictive models—where parameters are allowed to vary across groups—are retained (Bowen & Guo, 2011). The parameters that are allowed to vary across groups demonstrate a moderating effect of the group (Bowen & Guo, 2011).

5 Results

5.1 Model fit

We first ran a CFA model for the total sample where *COVID-19 Concerns* was loaded on by the following factors: *Concerns for Contracting the Virus*, *Concerns*

for *Increasing Infections*, *Concerns for Global Spread*, *Concerns for Not Having a Vaccine*, and *Concerns for Insufficient Protections*. In order to identify the latent construct, the *Concerns for Contracting the Virus* factor loading was fixed to 1.0. Additionally, in order to improve model fit, the modification indexes in the original output were used to identify potential error correlations. In doing so, *Concerns for Increasing Infections* was correlated with *Concerns for Global Spread* and *Concerns for Not Having a Vaccine*; *Concerns for Not Having a Vaccine* was also correlated with *Concerns for Contracting the Virus*. All factor loadings were statistically significant, had similar loadings, and had standardized values above 0.7, which exceeds the 0.4 threshold recommended by Stevens (1992). Overall, the CFA model had an excellent fit to the data (RMSEA = 0.000; CFI = 1.000).

Second, we ran an SEM to test our theoretical model (Fig. 1). Again, our model had an excellent level of fit to the data (RMSEA = 0.041; CFI = 0.997). Third, we ran three Multi-Group CFA (MGCFA) models: a configural model (RMSEA = 0.043; CFI = 1.000); a metric model (RMSEA = 0.030; CFI = 1.000); and a scalar model (RMSEA = 0.061; CFI = 0.996). All three models had excellent levels of fit to the data. Moreover, the metric model was not significantly different from the configural model (Chi-Square difference value = 6.799; df difference = 4; and $p = .147$), which allows us to use the same factor loadings across groups and by doing so, compare path coefficients. However, the scalar model was significantly different from the metric model (Chi-Square difference value = 222.005; df difference = 14; and $p = .000$). Therefore, we constrained item intercepts (i.e. thresholds in the case of ordinal variables) one at a time to see if a partially constrained scalar model was significantly different from the metric model. We found that models when the intercepts (thresholds) of *Concerns for Increasing Infections* and *Concerns for Insufficient Protections* were constrained to be equal, the scalar model was not significantly different from the metric model. Thus, we were able to achieve *partial* metric invariance by allowing the intercepts (thresholds) for *Concerns for Contracting the Virus*, *Concerns for Global Spread*, and *Concerns for Not Having a Vaccine* to vary. As a result, we are able to estimate the mean differences in COVID-19 concerns across groups. Additionally, we tested the invariance of our error correlations, finding that the correlation between *Concerns for Increasing Infections* and *Concerns for Not Having a Vaccine* was not invariant across groups, and thus was estimated separately across samples. Finally, in our MGSEM we found that the relationships between (a) *Social Support* and *COVID-19 Coping*, (b) *COVID-19 Coping* and *COVID-19 Concerns*, and (c) *COVID-19 Concerns* and *Emotional unavailability for Learning* were not invariant across groups, and thus were also estimated separately across samples.

5.2 Model results

To compare descriptive statistics across samples, we performed a series of independent sample t-tests across study variables. As seen in Tables 1 and 2, students in Israel have moderately higher levels of COVID-19 coping, no differences in levels of perceived social support, and moderately higher levels of emotional

Table 1 Descriptive statistics for US sample ($N=1391$)

Variable	<i>M</i>	<i>SD</i>	Min	Max
Concerns: contracting virus	2.917	1.188	1	5
Concerns: increasing infections	3.472	1.254	1	5
Concerns: global spread	3.434	1.217	1	5
Concerns: no vaccine	3.169	1.341	1	5
Concerns: insufficient protection	2.877	1.332	1	5
COVID-19 coping	6.566	2.070	1	10
Perceived social support	7.455	2.338	1	10
Emotional unavailability for learning	2.843	1.367	1	5

Table 2 Descriptive statistics for Israel sample ($N=4423$)

Variable	<i>M</i>	<i>SD</i>	Min	Max
Concerns: contracting virus	3.116***	1.107	1	5
Concerns: increasing infections	3.39*	1.066	1	5
Concerns: global spread	3.58***	1.060	1	5
Concerns: no vaccine	3.27*	1.173	1	5
Concerns: insufficient protection	2.894	1.165	1	5
COVID-19 coping	7.245***	2.034	1	10
Perceived social support	7.513	2.381	1	10
Emotional unavailability for learning	3.102***	1.328	1	5

Asterisks represent if sample means from Israel sample were statistically different from US sample means

* $p \leq .05$; ** $p < .01$; *** $p < .001$

unavailability for learning. There are slight differences in the variables that are used to create our latent construct of COVID-19 concerns, as students from Israel were slightly more concerned about contracting the virus, the global spread of the virus, and not having a vaccine for the virus. Conversely, students from Israel were slightly less concerned about increasing infections. Despite these differences, we found that students in Israel did not have significantly different levels of COVID-19 concerns (estimate = -0.050 ; $SE = 0.035$; $p = .152$) from our partially scalar invariant CFA model. While strong correlations of COVID-19 concern indicators were observed across samples (Tables 3 and 4), our use of a latent construct reduces the concerns of multi-collinearity in this context.

When considering our MGSEM model, our results confirm our theoretical model. Perceived social support was negatively related to emotional unavailability for learning ($-.044$, $p < .001$) and positively related to COVID-19 coping (US = $.224$, $p < .001$; Israel = $.311$, $p < .001$); COVID-19 coping was negatively related to emotional unavailability for learning ($-.161$, $p < .001$) and negatively related to COVID-19 concerns (US = $-.168$, $p < .001$; Israel = $-.108$, $p < .001$);

Table 3 Spearman rank order correlations (U.S.)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Concerns: contracting virus	1							
(2) Concerns: increasing infections	.711	1						
(3) Concerns: global spread	.685	.827	1					
(4) Concerns: no vaccine	.599	.622	.624	1				
(5) Concerns: insufficient protection	.613	.631	.587	.626	1			
(6) COVID-19 coping	-.317	-.306	-.293	-.351	-.317	1		
(7) Perceived social support	-.061	-.023	-.035	-.041	-.040	.351	1	
(8) Emotional unavailability for learning	.191	.205	.188	.180	.210	-.377	-.178	1

Bold values are statistically significant ($p < .05$)

Table 4 Spearman rank order correlations (Israel)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Concerns: contracting virus	1							
(2) Concerns: increasing infections	.603	1						
(3) Concerns: global spread	.554	.729	1					
(4) Concerns: no vaccine	.515	.571	.584	1				
(5) Concerns: insufficient protection	.516	.480	.461	.519	1			
(6) COVID-19 coping	-.271	-.259	-.260	-.284	-.262	1		
(7) Perceived social support	-.068	-.052	-.033	-.068	-.089	.407	1	
(8) Emotional unavailability for learning	.242	.255	.244	.241	.235	-.425	-.238	1

Bold values are statistically significant ($p < .05$)

and COVID-19 concerns were positively related to emotional unavailability for learning (US = .151, $p < .001$; Israel = .379, $p < .001$).

Additionally, COVID-19 coping, as well as COVID-19 concerns, significantly mediated the relationships between perceived social support and emotional unavailability for learning, while COVID-19 concerns also significantly mediated the relationships between COVID-19 coping and unavailability for learning. The indirect effect of perceived social support on emotional unavailability for learning *through* COVID-19 coping was $-.036$, $p < .001$ for students in the U.S. and $-.050$, $p < .001$ for students in Israel. These indirect effects accounted for 42% and 47% of the total effects, respectively. The indirect effect of perceived social support on emotional unavailability for learning *through* COVID-19 coping and COVID-19 concerns (together) was $-.006$ ($p < .001$) for students in the US and $-.013$ ($p < .001$)

for students in Israel. These indirect effects accounted for 7% and 12% of the total effects, respectively. The indirect effect of COVID-19 coping on unavailability for learning *through* COVID-19 concerns was -0.025 ($p < .001$) for students in the US and $-.041$ ($p < .001$) for students in Israel. These indirect effects accounted for 13% and 20% of the total effects, respectively (Table 5).

Finally, students' country significantly moderated the relationships between (a) perceived social support and COVID-19 coping, (b) COVID-19 coping and COVID-19 concerns, and (c) COVID-19 concerns and emotional unavailability for learning. Specifically, the relationship between perceived social support and COVID-19 coping was moderately stronger for students in Israel (0.224, $p < 0.001$ in the U.S. compared to 0.311, $p < .001$ in Israel); the relationship between COVID-19 coping and COVID-19 concerns was moderately stronger for students in the U.S. (-0.168 , $p < .001$ in the U.S. compared to -0.108 , $p < .001$ in Israel); and the relationship between COVID-19 concerns and emotional unavailability for learning was substantially stronger for students in Israel (0.151, $p < .001$ in the U.S. compared to 0.379, $p < .001$ in Israel). Unsurprisingly, the percent of variance explained in COVID-19 coping was larger in Israel (0.064 in the U.S. compared to 0.132 in Israel). Additionally, the percent of variance explained in COVID-19 concerns was larger in the U.S. (0.156 in the U.S. compared to 0.127 in Israel). Finally, the percent of variance explained in emotional unavailability for learning was larger in Israel (0.187 in the US compared to 0.244 in Israel).

6 Discussion

As COVID-19 upended daily living around the world, college students experienced significant disruption and distress. Universities responded in a variety of ways, offering support by way of academic flexibilities, financial resources, living accommodations, and continued counseling and mental health services. However, in the context of lockdowns, social isolation, online learning, and other concerns around the pandemic, many students still struggled with emotional unavailability for learning. To explore why and how this occurred, we utilize a unique sample of students from four universities in the U.S. and Israel. While research has examined incidence of student depression and anxiety (Schiff et al., 2021), the effects of the pandemic on factors such as sleep, motivation, and concern for peers (Tasso et al., 2021), and significant factors related to the pandemic influencing mental health (Ren et al., 2021), we present the first cross-national findings of how perceived social support relates to academic engagement through COVID-19 coping and related concerns for students.

Notably, higher levels of perceived social support were associated with lower levels of emotional unavailability for learning. In other words, the more social support an individual perceived, the more likely they were to perceive themselves as being emotionally available for studying and learning. This finding is consistent previous literature suggesting that social support is a resource that contributes to numerous areas of wellbeing and functioning (Hobfoll et al., 1997; Schwarzer & Knoll, 2007), such as academic engagement.

Table 5 Model parameters

	United States		Both		Israel	
	Estimate	SE	Estimate	SE	Estimate	SE
Factor loadings						
Concerns: contracting virus			1.000	0.000		<.000
Concerns: increasing infections			1.036	0.013		<.000
Concerns: global spread			0.974	0.013		<.000
Concerns: no vaccine			0.963	0.015		<.000
Concerns: insufficient protection			0.894	0.015		<.000
Error correlations						
Increasing infections with global spread			0.119	0.008		<.000
Increasing infections with no vaccine	-0.068	0.010			-0.021	0.005
Contracting virus with no vaccine			-0.067	0.006		<.000
Direct effects						
Perceived social support → Emotional unavailability for learning			-0.044	0.005		<.000
Perceived social support → COVID-19 coping	0.224	0.026			0.311	0.013
COVID-19 coping → Emotional unavailability for learning			-0.161	0.006		<.000
COVID-19 coping → COVID-19 concerns	-0.168	0.009			-0.108	0.006
COVID-19 concerns → Emotional unavailability for learning	0.151	0.030			0.379	0.027
Indirect effects						
Perceived social support → COVID-19 coping → Emotional unavailability for learning	-0.006	0.001			-0.013	0.001
Perceived social support → COVID-19 coping → COVID-19 concerns → Emotional unavailability for learning						<.000

Table 5 (continued)

	United States			Both			Israel		
	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>
Perceived social support →	-0.036	0.005	<.000				-0.05	0.003	<.000
COVID-19 coping →									
Emotional unavailability for learning									
COVID-19 coping →	-0.025	0.005	<.000				-0.041	0.003	<.000
COVID-19 concerns →									
Emotional unavailability for learning									
Construct variances									
<i>Residuals</i>									
COVID-19 coping	4.000	0.173	<.000				3.607	0.081	<.000
COVID-19 concerns	0.652	0.018	<.000				0.330	0.023	<.000
<i>R-Squared</i>									
COVID-19 coping	0.064						0.132		
COVID-19 concerns	0.156						0.127		
Emotional unavailability for learning	0.187						0.244		
Model fit indexes									
RMSEA	0.040 [90% CI: 0.035–0.045]								
CFI	0.997								

Unstandardized estimates are followed by standard errors in parentheses

Additionally, we find that a significant part of this relationship occurred through greater rates of coping and fewer concerns about various facets of the COVID-19 pandemic—including both personal factors (e.g., contracting the virus) as well as societal and global factors (e.g., overall increases in infections, global spread). Consistent with theories of coping (Lazarus & Folkman, 1984), we find that perceived social support directly predicted students' coping during the pandemic. Furthermore, COVID-19 coping negatively predicted COVID-19 concerns and unavailability for learning, such that individuals with higher levels of coping had fewer COVID-19 concerns and were less likely to perceiving themselves as emotionally unavailable for learning. Moreover, COVID-19 concerns were positively associated with unavailability for learning, indicating that COVID-19-related concerns likely detract from an individual's emotional resources for learning and studying, which is consistent with previous literature on resource loss (Hobfoll et al., 1997).

Furthermore, consistent with the theoretical understanding that social support leads to positive outcomes in the face of stress through improved coping (Benight et al., 1999; Schwarzer & Knoll, 2007), tests of indirect effects indicated that COVID-19 coping and COVID-19 concerns mediated the relationship between social support and emotional unavailability for learning. This suggests that social support contributes to greater coping abilities and, subsequently, fewer COVID-19 concerns, which ultimately, results in greater emotional availability for learning; or, conversely—lower social support leads to poorer coping abilities and greater COVID-19 concerns, which limits emotional availability for learning.

Moreover, despite having similar amounts of social supports from their respective surroundings, our findings demonstrate that students in Israel, on average, reported coping better with the COVID-19 pandemic than U.S. based students. Despite having similar levels of COVID-19 concerns, Israeli students were also slightly less available for learning. In addition, the relationship between perceived social support and COVID-19 coping, as well as the relationship between COVID-19 concerns and emotional unavailability for learning, was stronger for students in Israel, while the relationship between COVID-19 coping and COVID-19 concerns was stronger for students in the U.S. The stronger associations between perceived support and coping among students in Israel students may stem from the collectivist characteristic of the Israeli society which emphasizes group membership, social cohesiveness, and solidarity—especially in times of collective stress or traumatic events (Ben-Dor et al., 2008; Birenbaum-Carmeli, 2001; Israeli et al., 2018). Embedded within social cohesiveness and solidarity is the high value attributed to social support, which can be seen as a major resource for better coping. These values are emphasized in stress and coping theories (Lazarus & Folkman, 1984), as well as in research on collective trauma (Besser & Neria, 2012; Leshem et al., 2023; Schiff et al., 2010).

Alongside the collectivistic characteristics, Israel is also known as a family-oriented society (Gavriel-Fried & Shilo, 2017), which emphasizes the value of large families and strong ties with extended family members (Granek et al., 2017). During the COVID-19 pandemic, such orientation may raise multiple concerns about the health of extended family members and friends that may hamper Israeli students' emotional availability for learning to a greater degree than that of U.S. students. These interpretations may also support our finding that the percent of variance

explained in COVID-19 coping and emotional unavailability for learning was larger in Israel.

Further exasperating emotional unavailability for learning and the potential benefits of university-offered support, COVID-19 in the U.S. was an especially tense political and ideological issue, with significant debates on public health practices among prominent local, state, and national figures. Simultaneously, as many social and emotional support opportunities were constrained by the pandemic's stay-at-home orders, some students engaged in protests and demonstrations on race, racism, and the Black Lives Matter movement in response to widespread coverage of the deaths of George Floyd, Breonna Taylor, Ahmaud Arbery, and others. These additional sources of distress may have influenced emotional availability for learning or the benefits for those who were able to access various supports.

Overall, these findings are consistent with theories of coping and resilience following major life stressors. In line with Lazarus and Folkman's (Lazarus, 1993; Lazarus & Folkman, 1984) work on coping, students using active strategies, such as seeking support, appear better able to manage stressors. Furthermore, in line with Hobfoll's conservation of resources theory (Hobfoll et al., 1997), our findings suggest that the presence of social support serves as a catalyst for additional gains that protect against worry. Specifically, our results suggest that in the context of stress, psychological resources (social support) not only contribute to psychological well-being (coping), but also to other domains of functioning (availability for learning). Although our study did not assess self-efficacy beliefs, previous research in social-cognitive theory has suggested that the relationship between social support and trauma-related distress is mediated by self-efficacy, such that when individuals receive social support, their self-efficacy increases and they experience less trauma-related distress (Benight et al., 1999). Our results tell a similar story: it seems that when students affected by COVID-19 perceive social support, they are better able to cope and engage in educational activities.

6.1 Limitations

We acknowledge a few limitations for interpreting our results and applying them in other contexts. First, the cross-sectional samples provide a snapshot of student experience and attitudes during distinct periods early in the pandemic during 2020. Therefore, we cannot be sure of the direction of the variable relationships. Moreover, the exact pandemic circumstances may have changed (e.g., infection rates, stay-at-home policies) during the survey administration period. For example, at various times throughout the survey period, there were cross-country differences in both COVID-19 infection rates and mitigation guidelines (Bareket-Bojmel et al., 2021). Here, differences in infection risks, as well as the extent of the mitigation guidelines, could potentially alter individuals' routines and ultimately alter their levels of psychological distress and coping during the pandemic (Bareket-Bojmel et al., 2021). Nevertheless, as individuals in each country experienced significant impacts of COVID-19 on their daily experiences over the survey duration, our findings suggest that other cultural, political, and social factors *beyond* differences in COVID-19

cases and policies may be present, especially when considering differences in the *relationships* across our study constructs and not merely differences in the constructs themselves.

Additionally, as this study is the first of its kind to examine these relationships in this distinct context, we leveraged unique single-item constructs to measure perceived social support, coping, and emotional unavailability for learning at the onset of the pandemic. With limited survey space and time, single-item constructs allowed us to capture students' general perceptions across a range of domains—including a new area of emotional academic engagement, which allowed us to understand novel relationships across multiple domains. However, we recognize that additional items may be leveraged in the future to capture nuances within these constructs, as well as to describe these measures more comprehensively. In this regard, future research should explore additional items related to these constructs, such as items from the Social Support Questionnaire. This would allow for a deeper examination and understanding of the kinds of social, emotional, and other supports that universities could employ in an effort to increase availability for learning. Future research should also explore *who* is providing support and *how* this support is being provided, which can help inform more effective interventions. Moreover, additional survey waves and longitudinal analysis of coping trajectories could allow for increased knowledge of how social supports may have interacted with COVID-19 coping, concerns, and availability for learning over time. Furthermore, while self-perception and self-report measures can offer meaningful insight into student experience, studies that incorporate academic performance metrics can supplement our findings with specific impacts student performance and observed learning.

Finally, considering external validity, while survey participants included 5418 total students across a range of academic programs at the undergraduate and graduate level from four universities, we recognize that our sample and findings may not be interpretable in a way that reflects all university settings and contexts. Findings should also be considered with the potential for some selection bias, as students who were more affected by COVID-19 may have been more likely to participate in the university surveys.

6.2 Conclusion

Stemming from our central finding—that increased social support had a positive relationship with coping and a negative relationship with availability for learning—our study offers important implications for colleges and universities. For example, as early research on COVID-19's associations with mental health have found increased depression and anxiety (Aqeel et al., 2022; Cao et al., 2020; Han et al., 2013; Odriozola-González et al., 2020; Qiu et al., 2020), universities may want to consider sustained investments in additional resources related to student wellness. Furthermore, as research has found that students reported increased support and better adjustment from peer-mentoring programs during the pandemic (Rastegar Kazerooni et al., 2020), the resources that universities consider may range from community building opportunities to formal counseling services.

Moving forward, pandemic preparedness and response must extend beyond testing protocols, contact tracing, and quarantine logistics. At their foundation, universities are providers of education and learning opportunities, yet students may not be able to effectively access these opportunities without the necessary emotional and practical supports. Therefore, universities should adopt innovative strategies to bolster social support, coping mechanisms, and emotional availability for learning—even when students are remote. Here, universities could consider offering web-based or computer-delivered mental health support services, which have shown positive results in recent years (Davies et al., 2014). Moreover, while our model does not distinguish demographic characteristics, recent research has identified the disparate impacts of the pandemic by race and ethnicity (Jabbari et al., 2022), socioeconomic status (Aucejo et al., 2020), gender (Zolotov et al., 2022), and age (Qiu et al., 2020). Thus, universities should also prioritize the needs of these groups in the services they offer before, during, and after times of crisis.

Acknowledgements An abstract of this paper was submitted and accepted at the Society for Social Work and Research Conference.

References

- Aqeel, M., Abbas, J., Shuja, K. H., Rehna, T., Ziapour, A., Yousaf, I., & Karamat, T. (2022). The influence of illness perception, anxiety and depression disorders on students mental health during COVID-19 outbreak in Pakistan: A Web-based cross-sectional survey. *International Journal of Human Rights in Healthcare*, 15(1), 17–30. <https://doi.org/10.1108/IJHRH-10-2020-0095>
- Arora, S., Chaudhary, P., & Singh, R. K. (2021). Impact of coronavirus and online exam anxiety on self-efficacy: The moderating role of coping strategy. *Interactive Technology and Smart Education*, 18(3), 475–492. <https://doi.org/10.1108/ITSE-08-2020-0158>
- Asberg, K. K., Bowers, C., Renk, K., & McKinney, C. (2008). A structural equation modeling approach to the study of stress and psychological adjustment in emerging adults. *Child Psychiatry and Human Development*, 39(4), 481–501. <https://doi.org/10.1007/s10578-008-0102-0>
- Aucejo, E. M., French, J., Ugalde Araya, M. P., & Zafar, B. (2020). The impact of COVID-19 on student experiences and expectations: Evidence from a survey. *Journal of Public Economics*, 191, 104271. <https://doi.org/10.1016/j.jpubeco.2020.104271>
- Baqutayan, S. M. S. (2015). Stress and coping mechanisms: A historical overview. *Mediterranean Journal of Social Sciences*, 6(2 S1), 479–488. <https://doi.org/10.5901/mjss.2015.v6n2s1p479>
- Bareket-Bojmel, L., Shahar, G., Abu-Kaf, S., & Margalit, M. (2021). Perceived social support, loneliness, and hope during the COVID-19 pandemic: Testing a mediating model in the UK, USA, and Israel. *British Journal of Clinical Psychology*, 60(2), 133–148. <https://doi.org/10.1111/bjc.12285>
- Ben-Dor, G., Pedahzur, A., Canetti-Nisim, D., Zaidise, E., Perliger, A., & Bermanis, S. (2008). I versus we: Collective and individual factors of reserve service motivation during war and peace. *Armed Forces & Society*, 34(4), 565–592. <https://doi.org/10.1177/0095327X07303609>
- Benight, C. C., Swift, E., Sanger, J., Smith, A., & Zeppelin, D. (1999). Coping self-efficacy as a mediator of distress following a natural disaster. *Journal of Applied Social Psychology*, 29(12), 2443–2464. <https://doi.org/10.1111/j.1559-1816.1999.tb00120.x>
- Berger, F., Schreiner, C., Hagleitner, W., Jesacher-Röbler, L., Roßnagl, S., & Kraler, C. (2021). Predicting coping with self-regulated distance learning in times of COVID-19: Evidence from a longitudinal study. *Frontiers in Psychology, Sec. Educational Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.701255>
- Besser, A., & Neria, Y. (2012). When home isn't a safe haven: Insecure attachment orientations, perceived social support, and PTSD symptoms among Israeli evacuees under missile threat. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(1), 34–46. <https://doi.org/10.1037/a0017835>

- Birenbaum-Carmeli, D. (2001). Between individualism and collectivism: The case of a middle class neighbourhood in Israel. *International Journal of Sociology and Social Policy*, 21(11/12), 1–25. <https://doi.org/10.1108/01443330110789673>
- Bowen, N. K., & Guo, S. (2011). *Structural equation modeling*. Oxford University Press.
- Browning, M. H. E. M., Larson, L. R., Sharaievska, I., Rigolon, A., McAnirlin, O., Mullenbach, L., Cloutier, S., Vu, T. M., Thomsen, J., & Reigner, N. (2021). Psychological impacts from COVID-19 among university students: Risk factors across seven states in the United States. *PLoS ONE*, 16(1), e0245327. <https://doi.org/10.1371/journal.pone.0273938>
- Byrne, B. M. (2011). *Structural equation modeling with mplus: Basic concepts, applications, and programming* (1st ed.). Routledge. <https://doi.org/10.4324/9780203807644>
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934. <https://doi.org/10.1016/j.psychres.2020.112934>
- Chao, R.C.-L. (2011). Managing stress and maintaining well-being: Social support, problem-focused coping, and avoidant coping. *Journal of Counseling & Development*, 89(3), 338–348. <https://doi.org/10.1002/j.1556-6678.2011.tb00098.x>
- Chiu, T. K. F. (2022). Applying the self-determination theory (SDT) to explain student engagement in online learning during the COVID-19 pandemic. *Journal of Research on Technology in Education*, 54(sup1), S14–S30. <https://doi.org/10.1080/15391523.2021.1891998>
- Cincidda, C., Pizzoli, S. F. M., Oliveri, S., & Pravettoni, G. (2022). Regulation strategies during COVID-19 quarantine: The mediating effect of worry on the links between coping strategies and anxiety. *European Review of Applied Psychology*, 72(6), 100671. <https://doi.org/10.1016/j.erap.2021.100671>
- Copeland, W. E., McGinnis, E., Bai, Y., Adams, Z., Nardone, H., Devadanam, V., Rettew, J., & Hudziak, J. J. (2021). Impact of COVID-19 pandemic on college student mental health and wellness. *Journal of the American Academy of Child & Adolescent Psychiatry*, 60(1), 134–141.e2. <https://doi.org/10.1016/j.jaac.2020.08.466>
- Daniels, L. M., Goegan, L. D., & Parker, P. C. (2021). The impact of COVID-19 triggered changes to instruction and assessment on university students' self-reported motivation, engagement and perceptions. *Social Psychology of Education*, 24(1), 299–318. <https://doi.org/10.1007/s11218-021-09612-3>
- Davies, E. B., Morriss, R., & Glazebrook, C. (2014). Computer-delivered and web-based interventions to improve depression, anxiety, and psychological well-being of university students: A systematic review and meta-analysis. *Journal of Medical Internet Research*, 16(5), e130. <https://doi.org/10.2196/jmir.3142>
- DeBerard, M. S., Spielmans, G. I., & Julka, D. L. (2004). Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College Student Journal*, 38, 66–81.
- Dupont, S., Galand, B., & Nils, F. (2015). The impact of different sources of social support on academic performance: Intervening factors and mediated pathways in the case of master's thesis. *European Review of Applied Psychology*, 65(5), 227–237. <https://doi.org/10.1016/j.erap.2015.08.003>
- Frazier, P., Gabriel, A., Merians, A., & Lust, K. (2019). Understanding stress as an impediment to academic performance. *Journal of American College Health*, 67(6), 562–570. <https://doi.org/10.1080/07448481.2018.1499649>
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109. <https://doi.org/10.3102/00346543074001059>
- Gavriel-Fried, B., & Shilo, G. (2017). The perception of family in Israel and the United States: Similarities and differences. *Journal of Family Issues*, 38(4), 480–499. <https://doi.org/10.1177/0192513X15617798>
- Goodwin, R. D., Weinberger, A. H., Kim, J. H., Wu, M., & Galea, S. (2020). Trends in anxiety among adults in the United States, 2008–2018: Rapid increases among young adults. *Journal of Psychiatric Research*, 130, 441–446. <https://doi.org/10.1016/j.jpsychires.2020.08.014>
- Granek, L., Nakash, O., & Carmi, R. (2017). Women and health in Israel. *The Lancet*, 389(10088), 2575–2578. [https://doi.org/10.1016/S0140-6736\(17\)30563-9](https://doi.org/10.1016/S0140-6736(17)30563-9)
- Gustems-Carnicer, J., & Calderón, C. (2013). Coping strategies and psychological well-being among teacher education students. *European Journal of Psychology of Education*, 28(4), 1127–1140. <https://doi.org/10.1007/s10212-012-0158-x>
- Gustems-Carnicer, J., Calderón, C., & Calderón-Garrido, D. (2019). Stress, coping strategies and academic achievement in teacher education students. *European Journal of Teacher Education*, 42(3), 375–390. <https://doi.org/10.1080/02619768.2019.1576629>

- Han, X., Han, X., Luo, Q., Jacobs, S., & Jean-Baptiste, M. (2013). Report of a mental health survey among Chinese international students at Yale university. *Journal of American College Health, 61*(1), 1–8. <https://doi.org/10.1080/07448481.2012.738267>
- Händel, M., Stephan, M., Gläser-Zikuda, M., Kopp, B., Bedenlier, S., & Ziegler, A. (2022). Digital readiness and its effects on higher education students' socio-emotional perceptions in the context of the COVID-19 pandemic. *Journal of Research on Technology in Education, 54*(2), 267–280. <https://doi.org/10.1080/15391523.2020.1846147>
- Hobfoll, S. E., Dunahoo, C. A., & Monnier, J. (1997). Conservation of Resources and traumatic stress. In J. R. Freedy & S. E. Hobfoll (Eds.), *Traumatic Stress: From Theory to Practice* (pp. 29–47). Springer. https://doi.org/10.1007/978-1-4899-1076-9_2
- Israeli, H., Itamar, S., & Shahar, G. (2018). The heroic self under stress: Prospective effects on anxious mood in Israeli adults exposed to missile attacks. *Journal of Research in Personality, 75*, 17–25. <https://doi.org/10.1016/j.jrp.2018.05.003>
- Jabbari, J., Ferris, D., Frank, T., Malik, S., & Bessaha, M. (2022). Intersecting race and gender across hardships and mental health during COVID-19: A moderated-mediation model of graduate students at two universities. *Race and Social Problems*. <https://doi.org/10.1007/s12552-022-09379-y>
- Johns Hopkins Coronavirus Resource Center. (2023). Mortality analysis. Retrieved January 13, 2023 from <https://coronavirus.jhu.edu/data/mortality>.
- Kline, R. B. (2006). *Principles and practice of structural equation modeling* (2nd ed.). Guilford.
- Lazarus, R. S. (1993). Coping theory and research: Past, present, and future. *Psychosomatic Medicine, 55*(3), 234–247.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
- Leshem, B., Kashy-Rosenbaum, G., Schiff, M., Benbenishty, R., & Pat-Horenczyk, R. (2023). Continuous exposure to terrorism during the COVID-19 pandemic: A moderated mediation model in the Israeli context. *International Journal of Environmental Research and Public Health, 20*(4), 2799. <https://doi.org/10.3390/ijerph20042799>
- Liu, C. H., Zhang, E., Wong, G. T. F., Hyun, S., & Hahm, H. C. (2020). Factors associated with depression, anxiety, and PTSD symptomatology during the COVID-19 pandemic: Clinical implications for U.S. young adult mental health. *Psychiatry Research, 290*, 113172. <https://doi.org/10.1016/j.psychres.2020.113172>
- Lizzio, A., Wilson, K., & Simons, R. (2002). University students' perceptions of the learning environment and academic outcomes: Implications for theory and practice. *Studies in Higher Education, 27*(1), 27–52. <https://doi.org/10.1080/03075070120099359>
- Mallinckrodt, B. (1988). Student retention, social support, and dropout intention: Comparison of Black and White students. *Journal of College Student Development, 29*(1), 60–64.
- Mana, A., Super, S., Sardu, C., Juvinya Canal, D., Moran, N., & Sagy, S. (2021). Individual, social and national coping resources and their relationships with mental health and anxiety: A comparative study in Israel, Italy, Spain, and the Netherlands during the Coronavirus pandemic. *Global Health Promotion, 28*(2), 17–26. <https://doi.org/10.1177/1757975921992957>
- Meng, H., Xu, Y., Dai, J., Zhang, Y., Liu, B., & Yang, H. (2020). Analyze the psychological impact of COVID-19 among the elderly population in China and make corresponding suggestions. *Psychiatry Research, 289*, 112983. <https://doi.org/10.1016/j.psychres.2020.112983>
- Mesghina, A., Wong, J. T., Davis, E. L., Lerner, B. S., Jackson-Green, B. J., & Richland, L. E. (2021). Distressed to distracted: Examining undergraduate learning and stress regulation during the COVID-19 pandemic. *Aera Open, 7*, 23328584211065720. <https://doi.org/10.1177/23328584211065721>
- Moore, K. A., & Lucas, J. J. (2021). COVID-19 distress and worries: The role of attitudes, social support, and positive coping during social isolation. *Psychology and Psychotherapy: Theory, Research and Practice, 94*(2), 365–370. <https://doi.org/10.1111/papt.12308>
- Moreno-Fernandez, J., Ochoa, J. J., Lopez-Aliaga, I., Alférez, M. J. M., Gomez-Guzman, M., Lopez-Ortega, S., & Diaz-Castro, J. (2020). Lockdown, emotional intelligence, academic engagement and burnout in pharmacy students during the quarantine. *Pharmacy, 8*(4), 194. <https://doi.org/10.3390/pharmacy8040194>
- Muthén, B., & Muthén, B. O. (2009). *Statistical analysis with latent variables* (Vol. 123). Wiley. www.statmodel.com Version 5.21.
- Odrizola-González, P., Planchuelo-Gómez, Á., Iruirtia, M. J., & de Luis-García, R. (2020). Psychological symptoms of the outbreak of the COVID-19 confinement in Spain. *Journal of Health Psychology, 27*(4), 825–835. <https://doi.org/10.1177/1359105320967086>

- Oducado, R. M., & Estoque, H. (2021). Online learning in nursing education during the COVID-19 pandemic: Stress, satisfaction, and academic performance. *Journal of Nursing Practice*, 4(2), 143–153. <https://doi.org/10.30994/jnp.v4i2.128>
- Park, C. L., Finkelstein-Fox, L., Russell, B. S., Fendrich, M., Hutchison, M., & Becker, J. (2021). Americans' distress early in the COVID-19 pandemic: Protective resources and coping strategies. *Psychological Trauma: Theory, Research, Practice, and Policy*, 13(4), 422. <https://doi.org/10.1037/tra000931>
- Pat-Horenczyk, R., Schiff, M., Arënliu, A., Zasiékina, L., Kagialis, A., Ferreira, N., Nesterko, Y., Glaesmer, H., Fernández-Alcántara, M., & Benbenishty, R. (2022). Challenges faced by university students during the COVID-19: An international study in five countries during the early phase of the pandemic. *International Journal of Psychology*, 57(5), 547–558. <https://doi.org/10.1002/ijop.12846>
- Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in students' learning and performance: The Achievement Emotions Questionnaire (AEQ). *Contemporary Educational Psychology*, 36(1), 36–48. <https://doi.org/10.1016/j.cedpsych.2010.10.002>
- Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. *General Psychiatry*, 33(2), e100213. <https://doi.org/10.1136/gpsych-2020-100213>
- Raaper, R., Brown, C., & Llewellyn, A. (2022). Student support as social network: exploring non-traditional student experiences of academic and wellbeing support during the Covid-19 pandemic. *Educational Review*, 74(3), 402–421. <https://doi.org/10.1080/00131911.2021.1965960>
- Rastegar Kazerooni, A., Amini, M., Tabari, P., & Moosavi, M. (2020). Peer mentoring for medical students during the COVID-19 pandemic via a social media platform. *Medical Education*, 54(8), 762–763. <https://doi.org/10.1111/medu.14206>
- Ren, Z., Xin, Y., Ge, J., Zhao, Z., Liu, D., Ho, R. C. M., & Ho, C. S. H. (2021). Psychological impact of COVID-19 on college students after school reopening: a cross-sectional study based on machine learning. *Frontiers in Psychology*, 12, 641806. <https://doi.org/10.3389/fpsyg.2021.641806>
- Riley, K. E., & Park, C. L. (2014). Problem-focused vs. meaning-focused coping as mediators of the appraisal-adjustment relationship in chronic stressors. *Journal of Social and Clinical Psychology*, 33(7), 587–611. <https://doi.org/10.1521/jscp.2014.33.7.587>
- Sarason, B. R., Sarason, I. G., & Pierce, G. R. (1990). *Traditional views of social support and their impact on assessment*. Wiley.
- Schiff, M., Pat-Horenczyk, R., & Peled, O. (2010). The role of social support for Israeli adolescents continually exposed to terrorism: Protective or compensatory factors? *Journal of Child & Adolescent Trauma*, 3(2), 95–108. <https://doi.org/10.1080/19361521003761416>
- Schiff, M., Zasiékina, L., Pat-Horenczyk, R., & Benbenishty, R. (2021). COVID-related functional difficulties and concerns among university students during COVID-19 pandemic: A binational perspective. *Journal of Community Health*, 46(4), 667–675. <https://doi.org/10.1007/s10900-020-00930-9>
- Schwarzer, R., & Knoll, N. (2007). Functional roles of social support within the stress and coping process: A theoretical and empirical overview. *International Journal of Psychology*, 42(4), 243–252. <https://doi.org/10.1080/00207590701396641>
- Schwarzer, R., Knoll, N., & Rieckmann, N. (2004). Social support. In A. Kaptein & J. Weinman (Eds.), *Health Psychology* (pp. 158–181). Blackwell
- Sebri, V., Cincidda, C., Savioni, L., Ongaro, G., & Pravettoni, G. (2021). Worry during the initial height of the COVID-19 crisis in an Italian sample. *The Journal of General Psychology*, 148(3), 327–359. <https://doi.org/10.1080/00221309.2021.1878485>
- Shields, N. (2001). Stress, active coping, and academic performance among persisting and nonpersisting college students. *Journal of Applied Biobehavioral Research*, 6(2), 65–81. <https://doi.org/10.1111/j.1751-9861.2001.tb00107.x>
- Sohail, N. (2013). Stress and academic performance among medical students. *Journal of the College of Physicians and Surgeons Pakistan*, 23(1), 67–71.
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), e21279. <https://doi.org/10.2196/21279>
- Stevens, J. (1992). *Applied multivariate statistics for the social sciences*. Lawrence Erlbaum Associates.
- Sun, J.C.-Y., & Rueda, R. (2012). Situational interest, computer self-efficacy and self-regulation: Their impact on student engagement in distance education. *British Journal of Educational Technology*, 43(2), 191–204. <https://doi.org/10.1111/j.1467-8535.2010.01157.x>

- Tasso, A. F., Hisli Sahin, N., & San Roman, G. J. (2021). COVID-19 disruption on college students: Academic and socioemotional implications. *Psychological Trauma: Theory, Research, Practice, and Policy*, 13(1), 9–15. <https://doi.org/10.1037/tra0000996>
- Thoits, P. A. (1986). Social support as coping assistance. *Journal of Consulting and Clinical Psychology*, 54(4), 416–423. <https://doi.org/10.1037/0022-006X.54.4.416>
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 Coronavirus Disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*, 17(5), 1729. <https://doi.org/10.3390/ijerph17051729>
- Wheaton, B. (1985). Models for the stress-buffering functions of coping resources. *Journal of Health and Social Behavior*, 26(4), 352–364. <https://doi.org/10.2307/2136658>
- Yu, H., Li, M., Li, Z., Xiang, W., Yuan, Y., Liu, Y., Li, Z., & Xiong, Z. (2020). Coping style, social support and psychological distress in the general Chinese population in the early stages of the COVID-19 epidemic. *BMC Psychiatry*, 20(1), 426. <https://doi.org/10.1186/s12888-020-02826-3>
- Zhou, J., & Yu, H. (2021). Contribution of social support to home-quarantined Chinese college students' well-being during the COVID-19 pandemic: the mediating role of online learning self-efficacy and moderating role of anxiety. *Social Psychology of Education*, 24(6), 1643–1662. <https://doi.org/10.1007/s11218-021-09665-4>
- Zolotov, Y., Reznik, A., Bender, S., & Isralowitz, R. (2022). COVID-19 fear, mental health, and substance use among Israeli university students. *International Journal of Mental Health and Addiction*, 20(1), 230–236. <https://doi.org/10.1007/s11469-020-00351-8>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.

Jason Jabbari, PhD, MEd. (he/him) leads the education research portfolio at the Social Policy Institute, where he examines how policies and programs impact equity in academic and economic trajectories. As the Associate Director of Community Partnerships at the Social Policy Institute, Jabbari cultivates relationships with a variety of community organizations to help them understand and solve pressing social problems. His work has been supported by a variety of foundations, including the James S. McDonnell Foundation, the Smith Richardson Foundation, and the William T. Grant Foundation.

Melissa Bessaha, PhD, LMSW, MA is an Associate Professor at the State University of New York (SUNY) Stony Brook University School of Social Welfare where she also serves as Chair of the Families, Youth, and Transition to Adulthood Specialization in the Master of Social Work (MSW) program. She holds a PhD in social work (University of Maryland), MSW in clinical social work (New York University), and Master of Arts and Bachelor of Science degrees in psychology (Stony Brook University). Her research centers on the mental health and wellbeing during the transition to adulthood particularly around underserved populations and their social relationships and supports. Dr. Bessaha's work is dedicated to informing culturally responsive practice interventions and policies that promote mental health and higher education equity among youth and young adults.

Sana Malik, MSW, MPH, DrPH is an Assistant Professor at the Stony Brook University School of Social Welfare and serves as the chair of the American Public Health Association Public Health Social Work Section. She has served as a consultant for various health and social service agencies, such as the United Nations High Commissioner for Refugees. She was awarded a U.S. Fulbright Fellowship in Jordan, completed a Masters in Social Work from Virginia Commonwealth University, and later completed her Masters and Doctorate in Public Health from Johns Hopkins University. Dr. Malik's area of inquiry falls broadly under the umbrella of examining health disparities in underserved populations including racial and ethnic minority groups, with a focus on behavioral health, cancer-related disparities, the social determinants of health, social support structures, barriers and facilitators to care seeking behaviors, and

culturally as well as religiously tailored health education programming.

Dan Ferris, PhD, MPA is the Assistant Dean for Policy Initiatives and Assistant Professor of Practice at the Brown School at Washington University in St. Louis, and Associate Director of Training & Education at the Social Policy Institute. In these roles, he applies experience working with government, community organizations, and higher education to his teaching, research, and commitment to policy practice. His research interests focus on participation and inequities in food insecurity, healthcare, and voting rights and administration. Dan received his MPA from the NYU Wagner Graduate School of Public Service and PhD in Public and Social Policy from Saint Louis University.

Sophie Brickman, MA is a PhD candidate in clinical psychology with a trauma emphasis at the University of Colorado Colorado Springs, where she also earned her master's degree. She earned her bachelor's degree in psychology and health: science, society and policy at Brandeis University. Her research and clinical interests include posttraumatic growth, trauma memory, and evidence-based trauma treatment.

Miriam Schiff (PhD, MSW, MA) is a Professor and Zena Harman Chair in Social Work at Paul Baerwald School of Social Work and Social Welfare, Hebrew University of Jerusalem, Israel. She is also the chair of the Baerwald school and Hadassah university medical center research group on social work in health care. Currently, she is the chair of The Authority for Research Students in the social sciences and humanities. Her main research interests are in the moderators and mediator factors explaining the associations between disasters or man-made trauma and health and mental health indicators among adolescents and young adults as well as among vulnerable population (e.g., the ultra-Orthodox Jews in Israel).

Ruth Pat-Horenczyk, PhD is a Full Professor at the School of Social Work and Social Welfare at the Hebrew University of Jerusalem and a clinical psychologist. Her research topics focus on risk and protective factors for childhood PTSD, relational trauma, resilience and posttraumatic growth. Her current projects are on predicting resilience in breast cancer patients, and on the responses and needs of university students in the context of the COVID-19 pandemic.

Michal Grinstein-Weiss, PhD is the Director of the Social Policy Institute at Washington University in St. Louis and Shanti K. Khinduka Distinguished Professor. She also holds a position as a Nonresident Senior Fellow at the Brookings Institution. A leading expert in the asset-building field, Dr. Grinstein-Weiss is influential in the design of innovative policies to promote household financial security and social and economic mobility, both in the United States and internationally.

Tyler Frank, MS is a PhD student in the Public Health Sciences program at the Brown School at Washington University in St. Louis. He received his Master of Science in Applied Health Behavior Research at the Washington University in St. Louis School of Medicine. With a background in basic and clinical biomedical research labs, his current work focuses on the implications of food insecurity in low-income pregnant women in the U.S. Through using team science to tackle complex social problems and bridge the gap between research and policy, he hopes to improve public health for all.